

A BRIEF GUIDE TO AUDIO CONFERENCING IN HIGHER ED

# CLASSROOMS



## Finding inclusive solutions for distance learning

The increasing popularity of distance learning and the need to capture lecture audio have highlighted the demand for high-quality audio conferencing systems in educational settings. But classrooms pose a range of problems for audio conferencing systems, such as achieving full-room pickup. In modern, dynamic learning environments, remote students need to hear everyone in the classroom – the instructor and their fellow students. And not just when they're at a podium or their desks. They need to be heard wherever they move in the room – to work or present at displays or to break into groups. This guide explains how the two leading approaches to audio conferencing for classrooms – traditional multicomponent systems and virtual microphone systems – stack up when it comes to pickup and other vital factors, including aesthetics, installation, value and more.

CLASSROOMS // OPTION A

# Multicomponent system

**May include**

Podium or lapel mic  
for the instructor

Distributed mics  
for students

DSP

Amplifier

Mixing board

Cables

Speakers

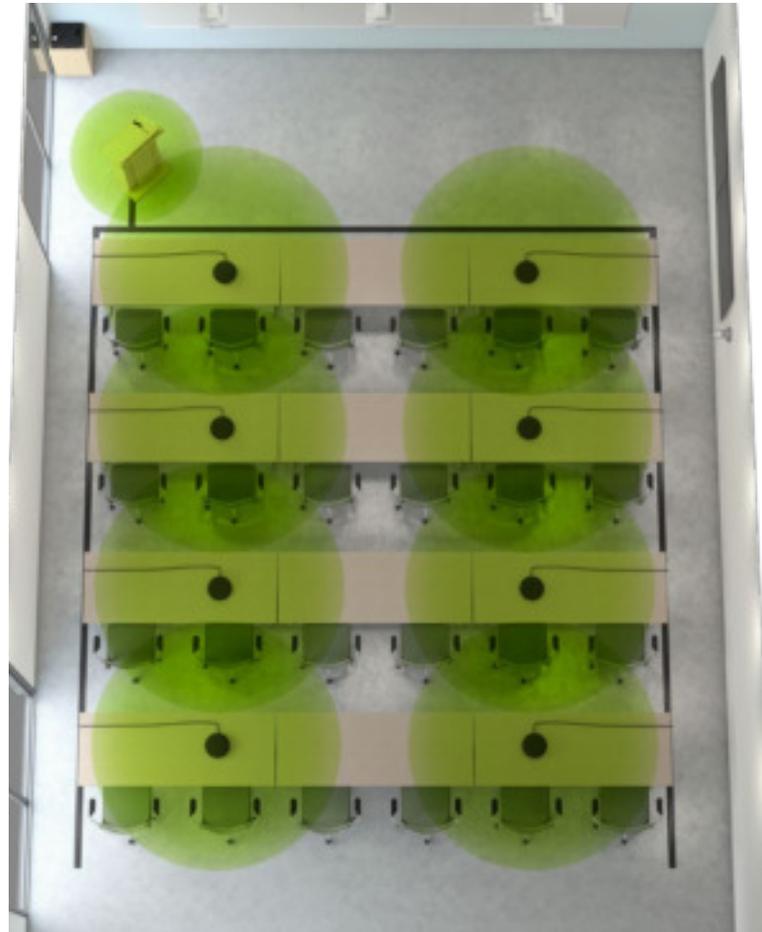
Requires UC&C-  
equipped computer



CLASSROOMS // OPTION A

# Multicomponent system

The green circles show approximate voice pickup zones. It will be very difficult for remote participants to hear in-room participants moving outside the circles – to work at displays or huddle in small breakout groups.



# Multicomponent system

This is the traditional approach to audio conferencing and lecture capture technology for classrooms. It can employ a range of microphones (including podium or lapel, tabletop, in-ceiling and mics hanging from the ceiling) connected by cables to a DSP, mixing board (some systems) and computer.

**Pickup for the instructor** The most common methods are a separate podium or lapel microphone.

**Pickup for students** A common solution is multiple desktop omnidirectional microphones. Other strategies may include one or more in-ceiling beamforming mic arrays or hanging omnidirectional mics.

**Installation** A multicomponent system can entail a range of procedures from creating pathways for cables for desktop and podium mics to installing in-ceiling mic arrays – usually requiring skilled technicians.

**Aesthetics** Desktop mics and cables can cause clutter. Installed in-ceiling systems are unobtrusive and can bring a polished premium look (with a price to match).

**Calibration and mixing** Calibration can be a challenge in a classroom. Getting the levels right so the instructor and students are balanced and can be heard by remote participants may require a technician and even real-time mixing of levels (input and output). Changing the room configuration will likely require recalibration.

**Performance** A properly calibrated and mixed system can provide professional grade performance. This can be diminished if participants talk away from their mics or move away from the prescribed pickup zones to work at displays. Accommodating more dynamic lessons (where participants move about the space and work at displays) would entail significant changes (reinstallation) to the hardware setup.

**Value** Prices for hardware and installation of traditional multicomponent systems vary widely, but they can be as high as tens of thousands of dollars. Institutions choosing this option should be sure to budget for ongoing maintenance and calibration (many providers offer service plans).

CLASSROOMS // OPTION B

# Virtual microphone system

**Includes**

2 wall-mounted  
integrated microphone  
and speaker bars

Cables

Connect module

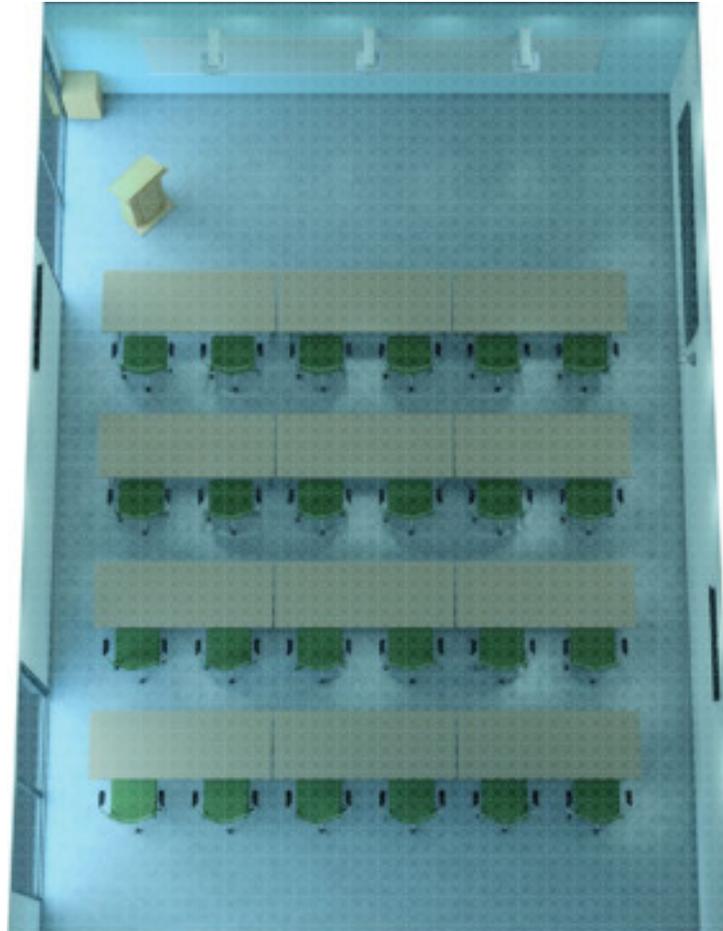
Requires UC&C-  
equipped computer



## CLASSROOMS // OPTION B

# Virtual microphone system

The HDL300 system employing virtual microphones provides full-room pickup. In-room participants can be heard by remote participants from anywhere in the room.



# Virtual microphone system

Virtual microphones are available only in the Nureva™ Dual HDL300 system. The key components of the system are two wall-mounted integrated microphone and speaker bars. The Dual HDL300 system employs an entirely new approach to classroom microphones, filling the space with 16,384 virtual microphones (8,192 per bar) that pick up participant voices no matter where they move in the room (up to 30' x 50' or 9.14 x 15.24 m).

Advanced signal processing capability handling 25,000 MIPS allows the system to process sound from all of its virtual mics in real time. It focuses on the cleanest sound sources, without gating or clipping, and optimizes them for distortion-free, natural-sounding conversations.

**Pickup for instructor and students** There is no need for a dedicated microphone for the instructor. The Dual HDL300 provides true full-room pickup. The instructor and in-room students can be heard throughout the entire space.

**Installation** The two units can be installed on the wall in less than 60 minutes. No specialized technicians are required.

**Aesthetics** The two 60" x 5.9" (152.4 x 15 cm) wall-mounted units are sleek and unobtrusive. There is no need for external microphones, speakers or cabling.

**Calibration and mixing** Calibration is automatic no matter how a room is configured or where participants face or move. The system's Nureva Room Manager software allows for optional adjustment of audio levels and integration with external speakers. It also provides regular improvements to the system through automatic firmware updates.

**Performance** The Dual HDL300 provides professional grade pickup and output.

**Value** The hardware cost for the Dual HDL300 system is a fraction of that of most multicomponent systems. There are also significant savings on installation and setup as the system can be easily installed by in-house personnel, and calibration is automatic.

# More than just classrooms

You've learned about the features and benefits of traditional multicomponent and virtual microphone systems for audio conferencing and lecture capture in classrooms, now get these additional guides to see how these technologies compare in other educational environments.

Large meeting spaces



Collaboration spaces



# Nureva audio conferencing

From mid-size to large spaces, Nureva has the audio conferencing and lecture capture needs of higher ed covered.



## HDL300 SYSTEM

*For spaces up to 25' x 25' (7.6 x 7.6 m).*

The HDL300 system's 8,192 virtual microphones provide true full-room pickup for virtually any room configuration. Whether you're seated at a table, holding a stand-up meeting or working at displays.

[Learn more](#)



## DUAL HDL300 SYSTEM

*For spaces up to 30' x 50' (9.14 x 15.24 m).*

The system's 16,384 virtual microphones provide true full-room pickup for virtually any room configuration. And it costs a fraction of traditional systems for large spaces.

[Learn more](#)